```
                                                        H  5

FFFFFFFFFFFFFFF         111              111        XXX         XXX
FFFFFFFFFFFFFFF         111              111        XXX         XXX
FFFFFFFFFFFFFFF         111              111        XXX         XXX
FFF                  111111           111111        XXX         XXX
FFF                  111111           111111        XXX         XXX
FFF                  111111           111111        XXX         XXX
FFF                     111              111           XXX   XXX
FFF                     111              111           XXX   XXX
FFF                     111              111           XXX   XXX
FFFFFFFF.FFF            111              111              XXX
FFFFFFFFFFFF            111              111              XXX
FFFFFFFFFFFF            111              111              XXX
FFF                     111              111           XXX   XXX
FFF                     111              111           XXX   XXX
FFF                     111              111           XXX   XXX
FFF                     111              111        XXX         XXX
FFF                     111              111        XXX         XXX
FFF                     111              111        XXX         XXX
FFF                  111111111        111111111     XXX         XXX
FFF                  111111111        111111111     XXX         XXX
FFF                  111111111        111111111     XXX         XXX
```

```
_$25

Symb
----
IOC1
IO_C
IO_C
IO_D
IO_F
IO_S
KILL

KILL
KILL
LB_E
LB_D
LB_F
LB_H
LB_L
LOCA
LOCA
LOCK

LOCK
LOCK
LOCK
LOC_
LOC_
L_CO
L_CO
L_DA
L_DA
MAIN
MAKE
MAKE
MAKE
MAKE
MAKE
MAKE

MAKE
MAKE
MAP_
MAP_

MAP
MARK
MARK
MARK
MARK
MARK
```

```
**FILE**ID**CHKHD2                                M  8
```

```
  CCCCCCCC  HH      HH  KK      KK  HH      HH  DDDDDDDD      222222
  CCCCCCCC  HH      HH  KK      KK  HH      HH  DDDDDDDD      222222
CC          HH      HH  KK      KK  HH      HH  DD      DD  22      22
CC          HH      HH  KK      KK  HH      HH  DD      DD  22      22
CC          HH      HH  KK    KK    HH      HH  DD      DD          22
CC          HH      HH  KK    KK    HH      HH  DD      DD          22
CC          HHHHHHHHHH  KKKKKK      HHHHHHHHHH  DD      DD        22
CC          HHHHHHHHHH  KKKKKK      HHHHHHHHHH  DD      DD        22
CC          HH      HH  KK    KK    HH      HH  DD      DD      22
CC          HH      HH  KK    KK    HH      HH  DD      DD      22
CC          HH      HH  KK      KK  HH      HH  DD      DD    22              ....
CC          HH      HH  KK      KK  HH      HH  DD      DD    22              ....
  CCCCCCCC  HH      HH  KK      KK  HH      HH  DDDDDDDD    2222222222        ....
  CCCCCCCC  HH      HH  KK      KK  HH      HH  DDDDDDDD    2222222222        ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0 MODULE CHKHD2 (
0                       LANGUAGE (BLISS32),
0                       IDENT = 'V04-000'
0                       ) =
1 BEGIN
1
1 !
1 !****************************************************************************
1 !*                                                                          *
1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
1 !*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.                  *
1 !*  ALL RIGHTS RESERVED.                                                    *
1 !*                                                                          *
1 !*  THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED   *
1 !*  ONLY IN  ACCORDANCE WITH  THE  TERMS  OF  SUCH  LICENSE  AND WITH THE   *
1 !*  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER   *
1 !*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY   *
1 !*  OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY   *
1 !*  TRANSFERRED.                                                            *
1 !*                                                                          *
1 !*  THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE   *
1 !*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT   *
1 !*  CORPORATION.                                                            *
1 !*                                                                          *
1 !*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS   *
1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
1 !*                                                                          *
1 !*                                                                          *
1 !****************************************************************************
1
1 !++
1 !
1 ! FACILITY:  F11ACP Structure Level 2
1 !
1 ! ABSTRACT:
1 !
1 !       This routine verifies that the block given it is in fact a
1 !       file header. If file number and/or file seqence number are also
1 !       supplied, they are checked as well.
1 !
1 ! ENVIRONMENT:
1 !
1 !       STARLET operating system, including privileged system services
1 !       and internal exec routines.
1 !
1 !--
1 !
1 !
1 ! AUTHOR:  Andrew C. Goldstein,  CREATION DATE:  13-Dec-1976  16:11
1 !
1 ! MODIFIED BY:
1 !
1 !       V03-005 ACG0408         Andrew C. Goldstein,    23-Mar-1984  11:31
1 !               Remove external reference to USER_STATUS
1 !
1 !       V03-004 CDS0003         Christian D. Saether    18-Jan-1984
1 !               ERR_STATUS macro declares USER_STATUS as an external.
```

```
1 !                     Explicitly declare it to avoid truncation errors.
1 !
1 !             V03-003 CDS0002         Christian D. Saether    17-Jan-1984
1 !                     Ooops.  Cannot use L_NORM linkage because this module
1 !                     gets pulled out into SYSINIT and MOUNTSHR images, at least.
1 !                     Remove test for EXTFID flag in CURRENT_VCB (we always use
1 !                     extended file ID format).
1 !
1 !             V03-002 CDS0001         Christian D. Saether    29-Dec-1983
1 !                     Use L_NORM linkage and BIND_COMMON macro.
1 !
1 !             V03-001 ACG0325         Andrew C. Goldstein,    3-Apr-1983  17:11
1 !                     Change use of header area length symbol
1 !
1 !             V02-003 ACG0156         Andrew C. Goldstein,    12-Mar-1980  15:21
1 !                     Fix header invalidation bug
1 !
1 !             B0102   ACG0146         Andrew C. Goldstein,    22-Feb-1980  21:40
1 !                     Change file sequence number check to no such file
1 !
1 !             B0101   acg0003         Andrew C. Goldstein,  10-Nov-1978  19:29
1 !             Add multi-volume support
1 !
1 !             B0100   ACG00001        Andrew C. Goldstein,  10-Oct-1978  19:59
1 !             Previous revision history moved to [F11B.SRC]F11B.REV
1 !**
1
1
1 LIBRARY 'SYS$LIBRARY:LIB.L32';
1 REQUIRE 'SRC$:FCPDEF.B32';
```

```
  1 GLOBAL ROUTINE CHECK_HEADER2 (HEADER, FILE_ID, HEADER_STATUS) =
  1
  1 !++
  1 !
  1 ! FUNCTIONAL DESCRIPTION:
  1 !
  1 !       This routine verifies that the block given it is in fact a
  1 !       file header. If file number and/or file seqence number are also
  1 !       supplied, they are checked as well.
  1 !
  1 ! CALLING SEQUENCE:
  1 !       CHECK_HEADER (ARG1, ARG2, ARG3)
  1 !
  1 ! INPUT PARAMETERS:
  1 !       ARG1: address of header image
  1 !       ARG2: address of file ID
  1 !
  1 ! IMPLICIT INPUTS:
  1 !       NONE
  1 !
  1 ! OUTPUT PARAMETERS:
  1 !       ARG3: (optional) address to store status return code
  1 !
  1 ! IMPLICIT OUTPUTS:
  1 !       USER_STATUS contains code if not valid
  1 !
  1 ! ROUTINE VALUE:
  1 !       0 if garbage
  1 !       1 if valid and correct file header
  1 !       2 if deleted file header
  1 !       4 if valid header but wrong sequence number
  1 !
  1 ! SIDE EFFECTS:
  1 !       NONE
  1 !
  1 !--
  1
  2 BEGIN
  2
  2 MAP
  2         HEADER          : REF BBLOCK,   ! file header arg
  2         FILE_ID         : REF BBLOCK,   ! file ID arg
  2         HEADER_STATUS   : REF VECTOR [,WORD]; ! status output arg
  2
  2 MACRO
M 2         EXIT    (STATUS_CODE, HEADER_STATE) =
M 2                 BEGIN
M 2                 STATUS = HEADER_STATE;
M 2                 IF ACTUALCOUNT GEQU 3
M 2                 THEN IF .HEADER_STATUS[0]
M 2                     THEN HEADER_STATUS[0] = STATUS_CODE;
M 2                 RETURN .STATUS;
M 2                 END
  2                 %;
  2
  2 LOCAL
  2         STATUS,                             ! return value of routine
```

```
2               MAP_AREA        : REF BBLOCK;   ! pointer to header map area
2
2       EXTERNAL ROUTINE
2               CHECKSUM;                       ! compute file header checksum
2
2
2       ! First check the structure level.
2       !
2
2       IF .HEADER[FH2$B_STRUCLEV] NEQ 2
2       THEN EXIT (SS$_FILESTRUCT, 0);
2
2       ! Check the area offsets and the retrieval pointer use counts for
2       ! consistency.
2       !
2
2       IF .HEADER[FH2$B_IDOFFSET] LSSU $BYTEOFFSET (FH2$L_HIGHWATER)/2
2       OR .HEADER[FH2$B_MPOFFSET] LSSU .HEADER[FH2$B_IDOFFSET]
2       OR .HEADER[FH2$B_ACOFFSET] LSSU .HEADER[FH2$B_MPOFFSET]
2       OR .HEADER[FH2$B_RSOFFSET] LSSU .HEADER[FH2$B_ACOFFSET]
2       OR .HEADER[FH2$B_MAP_INUSE] GTRU .HEADER[FH2$B_ACOFFSET] - .HEADER[FH2$B_MPOFFSET]
2       THEN EXIT (SS$_BADFILEHDR, 0);
2
2       ! At this point, we have verified that the block at least once was a
2       ! valid file header.
2       !
2       ! Look at the file number in the header. If zero, this is a
2       ! deleted header.
2       !
2
2       IF .HEADER[FH2$W_FID_NUM] EQL 0
2       AND .HEADER[FH2$B_FID_NMX] EQL 0
2       THEN EXIT (SS$_NOSUCHFILE, 2);
2
2       ! Now compute the header checksum.
2       !
2
2       IF NOT CHECKSUM (.HEADER)
2       THEN EXIT (SS$_BADCHKSUM, 2);
2
2       ! Check file number and file sequence number.
2       !
2
2       IF .HEADER[FH2$W_FID_NUM] NEQ .FILE_ID[FID$W_NUM]
2       OR .HEADER[FH2$B_FID_NMX] NEQ .FILE_ID[FID$B_NMX]
2       THEN EXIT (SS$_FILENUMCHK, 2);
2
2       IF .HEADER[FH2$W_FID_SEQ] NEQ .FILE_ID[FID$W_SEQ]
2       THEN EXIT (SS$_NOSUCHFILE, 4);
2
2       ! Header is ok.
2       !
2
2       RETURN 1;
2
1       END;                                    ! end of routine CHECK_HEADER
```

```
                                                              .TITLE  CHKHD2
                                                              .IDENT  \V04-000\

                                                              .EXTRN  CHECKSUM

                                                              .PSECT  $CODE$,NOWRT,2

                                            000C 00000        .ENTRY  CHECK_HEADER2, Save R2,R3           ; 1078
                            50        04  AC  D0 00002        MOVL    HEADER, R0                          ; 1144
                            02        07  A0  91 00006        CMPB    7(R0), #2                           ;
                                          13  13 0000A        BEQL    1$                                  ;
                                          52  D4 0000C        CLRL    STATUS                              ; 1145
                            03            6C  91 0000E        CMPB    (AP), #3                            ;
                                          7F  1F 00011        BLSSU   5$                                  ;
                            7B        0C  BC  E9 00013        BLBC    @HEADER_STATUS, 5$                  ;
                          0C  BC    08C0  8F  B0 00017        MOVW    #2240, @HEADER_STATUS               ;
                                          73  11 0001D        BRB     5$                                  ;
                            50        04  AC  D0 0001F 1$:    MOVL    HEADER, R0                          ; 1151
                            26            60  91 00023        CMPB    (R0), #38                           ;
                                          27  1F 00026        BLSSU   2$                                  ;
                            60        01  A0  91 00028        CMPB    1(R0), (R0)                         ; 1152
                                          21  1F 0002C        BLSSU   2$                                  ;
                          01  A0      02  A0  91 0002E        CMPB    2(R0), 1(R0)                        ; 1153
                                          1A  1F 00033        BLSSU   2$                                  ;
                          02  A0      03  A0  91 00035        CMPB    3(R0), 2(R0)                        ; 1154
                                          13  1F 0003A        BLSSU   2$                                  ;
                            51        02  A0  9A 0003C        MOVZBL  2(R0), R1                           ; 1155
                            53        01  A0  9A 00040        MOVZBL  1(R0), R3                           ;
                            51            53  C2 00044        SUBL2   R3, R1                              ;
51      3A   A0             08            00  ED 00047        CMPZV   #0, #8, 58(R0), R1                  ;
                                          13  1B 0004D        BLEQU   3$                                  ;
                                          52  D4 0004F 2$:    CLRL    STATUS                              ; 1156
                            03            6C  91 00051        CMPB    (AP), #3                            ;
                                          78  1F 00054        BLSSU   10$                                 ;
                            76        0C  BC  E9 00056        BLBC    @HEADER_STATUS, 11$                 ;
                          0C  BC    0810  8F  B0 0005A        MOVW    #2064, @HEADER_STATUS               ;
                                          78  11 00060        BRB     12$                                 ;
                            50        04  AC  D0 00062 3$:    MOVL    HEADER, R0                          ; 1165
                                      08  A0  B5 00066        TSTW    8(R0)                               ;
                                          0A  12 00069        BNEQ    4$                                  ;
                                      0D  A0  95 0006B        TSTB    13(R0)                              ; 1166
                                          05  12 0006E        BNEQ    4$                                  ;
                            52            02  D0 00070        MOVL    #2, STATUS                          ; 1167
                                          56  11 00073        BRB     9$                                  ;
                                      04  AC  DD 00075 4$:    PUSHL   HEADER                              ; 1172
                       0000G  CF          01  FB 00078        CALLS   #1, CHECKSUM                        ;
                            14            50  E8 0007D        BLBS    R0, 6$                              ;
                            52            02  D0 00080        MOVL    #2, STATUS                          ; 1173
                            03            6C  91 00083        CMPB    (AP), #3                            ;
                                          52  1F 00086        BLSSU   12$                                 ;
                            4E        0C  BC  E9 00088        BLBC    @HEADER_STATUS, 12$                 ;
                          0C  BC    0808  8F  B0 0008C        MOVW    #2056, @HEADER_STATUS               ;
                                          46  11 00092 5$:    BRB     12$                                 ;
                            50        04  AC  7D 00094 6$:    MOVQ    HEADER, R0                          ; 1178
                            61        08  A0  B1 00098        CMPW    8(R0), (R1)                         ;
                                          07  12 0009C        BNEQ    7$                                  ;
```

```
                         05   A1       0D    A0  91 0009E         CMPB    13(R0), 5(R1)                                   ; 1179
                                             14  13 000A3         BEQL    8$                                              ;
                              52             02  D0 000A5 7$:     MOVL    #2, STATUS                                      ; 1180
                              03             6C  91 000A8         CMPB    (AP), #3                                        ;
                                             2D  1F 000AB         BLSSU   12$                                             ;
                              29       0C    BC  E9 000AD         BLBC    @HEADER_STATUS, 12$                             ;
                         0C   BC     08B0    8F  B0 000B1         MOVW    #2224, @HEADER_STATUS                           ;
                                             21  11 000B7         BRB     12$                                             ;
                              51       04    AC  D0 000B9 8$:     MOVL    HEADER, R1                                      ; 1182
                              50       08    AC  D0 000BD         MOVL    FILE_ID, R0                                     ;
                         02   A0       0A    A1  B1 000C1         CMPW    10(RT), 2(R0)                                   ;
                                             16  13 000C6         BEQL    13$                                             ;
                              52             04  D0 000C8         MOVL    #4, STATUS                                      ; 1183
                              03             6C  91 000CB 9$:     CMPB    (AP), #3                                        ;
                                             0A  1F 000CE 10$:    BLSSU   12$                                             ;
                              06       0C    BC  E9 000D0 11$:    BLBC    @HEADER_STATUS, 12$                             ;
                         0C   BC     0910    8F  B0 000D4         MOVW    #2320, @HEADER_STATUS                           ;
                              50             52  D0 000DA 12$:    MOVL    STATUS, R0                                      ;
                                                 04 000DD         RET                                                     ;
                              50             01  D0 000DE 13$:    MOVL    #1, R0                                          ; 1188
                                                 04 000E1         RET                                                     ; 1190

; Routine Size:  226 bytes,    Routine Base:  $CODE$ + 0000


;  202            1191  1
;  203            1192  1 END
;  204            1193  0 ELUDOM




;                                 PSECT SUMMARY
;
;      Name                     Bytes                        Attributes
;
;  $CODE$                          226  NOVEC,NOWRT, RD , EXE,NOSHR, LCL, REL, CON,NOPIC,ALIGN(2)



;                         Library Statistics
;
;                                     -------- Symbols --------       Pages      Processing
;      File                           Total    Loaded   Percent      Mapped     Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1      18619        36         0      1000         00:02.0




;                                 COMMAND QUALIFIERS
;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:CHKHD2/OBJ=OBJ$:CHKHD2 MSRC$:CHKHD2/UPDATE=(ENH$:CHKHD2)

; Size:           226 code + 0 data bytes
; Run Time:          00:11.6
; Elapsed Time:      00:22.4
; Lines/CPU Min:       6197
; Lexemes/CPU-Min: 26197
; Memory Used:  168 pages
; Compilation Complete
```

0168 AH-BT13A-SE
VAX/VMS V4.0

DIGITAL EQUIPMENT CORPORATION
CONFIDENTIAL AND PROPRIETARY